~~Patent Claims~~ What is claimed is

1. Recognition system comprising
(a) at least one immobilized binding component A having at least one binding site for the recognition species B and
(b) at least one recognition species B which can bind to the binding component A and contains at least one binding site for a substrate S, characterized in that the binding of the binding component A to the recognition species B takes place in the form of a molecular pairing system.

2. Recognition system according to Claim 1, characterized in that the pairing system is a complex which is formed by association of the binding component A with the recognition species B via non-covalent interactions.

3. Recognition system according to Claim 2, characterized in that the non-covalent interactions are selected from hydrogen bridges, salt bridges, stacking, metal ligands, charge-transfer complexes and hydrophobic interactions.

4. Recognition system according to ~~one of Claims 1-3~~ claim 1, characterized in that the molecular pairing system contains a nucleic acid and its analogues.

5. Recognition system according to Claim 4, characterized in that the nucleic acids and their analogues is a pentose, preferably a pentopyranose or pentofuranose.

6. Recognition system according to Claim 5, characterized in that the pentose is selected from a ribose, arabinose, lyxose or xylose.

7. Recognition system according to ~~one of Claims 4-6,~~ claim 4 characterized in that the nucleic acid and its analogues is selected from pyranosyl-RNA (p-RNA), nucleic acid having one or more aminocyclohexylethanoic acid (CNA) units, peptide nucleic acid (PNA), or a nucleic acid having one or more [2-amino-4-(carboxymethyl)cyclohexyl]nucleobases.

8. Recognition system according to ~~one of Claims 4-7~~ claim 4, characterized in that the nucleobase of the nucleic acid or its analogues is selected from purine, 2,6-diaminopurine, 6-purinethiol, pyridine, pyrimidine, adenine, guanine, isoguanine, 6-thioguanine, xanthine, hypoxanthine, thymidine, cytosine, isocytosine, indole, tryptamine, N-phthaloyltryptamine, uracil, caffeine, theobromine, theophylline, benzotriazole or acridine.

9. Recognition system according to ~~one of Claims 4-8~~ claim 4, characterized in that the nucleic acid analogues are selected from ribopyranosyladenosine, ribopyranosylguanosine, ribopyranosylthymidine, ribopyranosylcytosine, ribopyranosyltryptamine or ribopyranosyl-N-phthalotryptamine, ribopyranosyl-uracil or their 2-amino-4-(carboxymethyl)ribopyranosyl] derivatives.

10. Recognition system according to ~~one of Claims 4-9~~ claim 4, characterized in that the length of the nucleic acid and its analogues is at least about 4-50, preferably at least about 4-25, in particular at least about 4-15, especially at least about 4-10, nucleotides.

11. Recognition system according to ~~one of Claims 1-10~~ claim 1, characterized in that the binding component A is immobilized on a carrier.

12. Recognition system according to Claim 11, characterized in that the carrier is selected from ceramic, metal, in particular noble metal, glasses, plastics, crystalline materials or thin layers of the carrier, in particular of the materials mentioned, or (bio)molecular filaments, such as cellulose, structural proteins.

13. Recognition system according to Claim 11 ~~or 12,~~ characterized in that the binding component A is immobilized on a carrier by means of a covalent bond, quasi-covalent bond or supramolecular bond by association of two or more molecular species such as molecules of linear constitution, in particular peptides, peptoids, proteins, linear oligo- or polysaccharides, nucleic acids and their analogues, or monomers such as heterocycles, in particular nitrogen heterocycles, or molecules of non-linear constitution such as branched oligo- or polysaccharides or antibodies and their functional moieties such as Fv fragments, single-chain Fv fragments (scFv) or Fab fragments.

14. Recognition system according to ~~one of Claims 11-13~~ claim 11, characterized in that the binding component A is immobilized at defined sites of the carrier, preferably in the form of a matrix.

15. Recognition system according to Claim 14, characterized in that the defined sites of the carrier are addressed.

16. Recognition system according to ~~one of Claims 11-15~~ claim 11, characterized in that the binding component A is immobilized on a carrier electrode of the carrier.

17. Recognition system according to ~~one of Claims 1-16,~~ claim 1 characterized in that the recognition species B is a biomolecule.

18. Recognition system according to Claim 17, characterized in that the biomolecule is selected from peptide, peptoid, protein such as receptor or functional moieties thereof such as the extracellular domain of a membrane receptor, antibodies or functional moieties thereof such as Fv fragments, single-chain Fv fragments (scFv) or Fab fragments, or cell constituents such as lipids, glycoproteins, filament constituents, or viruses, viral constituents such as capsids, or viroids, or their derivatives such as acetates and their active moieties, or substance libraries such as ensembles of structurally differing compounds, preferably oligomeric or polymeric peptides, peptoids, saccharides, nucleic acids.

19. Recognition system according to ~~one of Claims 1-18~~, claim 4 characterized in that the immobilized binding component A contains various binding sites for various recognition species B, by means of which various recognition species B can bind to the binding component A.

20. Recognition system according to ~~one of Claims 1-19~~, claim 4 characterized in that at least one further recognition species B is immobilized on the binding component A.

21. ~~Recognition~~ system according to Claim 19 ~~or 20~~, characterized in that it comprises

(a) at least one immobilized binding component A having at least 2+n different binding sites for at least 2+n different recognition species B1, B2 ... Bn and a further recognition species B(n+3) different from the recognition

species B1, B2 ... Bn, which is immobilized on the immobilized binding component A, and

(b) at least (n+3) different recognition species B1, B2 ... B(n+3),

where n is an integer from 0-20, preferably 0-10, in particular 0-5, especially 0 or 1.

22. Recognition system according to Claim 21, characterized in that the recognition species B1, B2 ... Bn originates from a substance library.

23. Recognition system according to Claim 21 ~~or 22,~~ characterized in that the structure of the recognition species B(n+3) is known.

24. Recognition system according to ~~one of Claims 19-23~~ claim 19, characterized in that the different recognition species B recognize the same substrate S.

25. Recognition system according to Claim 24, characterized in that the substrate S is selected from molecules, preferably pharmaceuticals and plant protection active compounds, metabolites, physiological messenger substances, derivatives of lead structures, substances which are produced or produced to an increased extent in the human or animal body in the case of pathological changes, or transition state analogues, or peptides, peptoids, proteins such as receptors or functional moieties thereof such as the extracellular domain of a membrane receptor, antibodies or functional moieties thereof such as Fv fragments, single-chain Fv fragments (scFv) or Fab fragments, or cell constituents such as lipids, glycoproteins, filament constituents, or viruses, viral constituents such as capsids, or viroids, or their derivatives such as acetates, or monomers such as heterocycles, in particular nitrogen heterocycles, or molecules of non-linear constitution such as branched oligo- or polysaccharides, or substance libraries such as ensembles of structurally differing compounds, preferably oligomeric or polymeric peptides, peptoids, saccharides, nucleic acids, esters, acetals or monomers such as heterocycles, lipids, steroids, or target structures for pharmaceuticals, preferably pharmaceutical receptors, voltage-dependent ion channels, transporters, enzymes or biosynthesis units of microorganisms.

26. Recognition system according to ~~one of Claims 1-25~~ claim 1, characterized in that it is an immunoassay.

27. Process for the identification of a substrate S in a sample with the aid of the recognition system according to ~~one of Claims 1-26~~ claim 1, characterized in that
(a) a recognition species B which recognizes the substrate S is brought into contact with the sample,
(b) is simultaneously or successively brought into contact with an immobilized recognition species B, and
(c) the formation of a complex of immobilized binding component A, recognition species B and substrate S is detected.

28. Process according to Claim 27, characterized in that the formation of the complex is controlled by means of physical parameters such as temperature, salts, solvents, electrophoretic processes.

29. Process according to Claim 27 ~~or 28,~~ characterized in that the complex is detected by means of labelling such as radioactive or fluorescent labelling, enzymatic labelling, redox labelling, spin labelling of the recognition species B, or by means of the complex itself, for example by means of electrode processes such as by means of chemical processes, e.g. redox processes in the environment or on the electrode or by means of a physical parameter such as by means of impedance measurement or direct current measurement.

30. Process according to ~~one of Claims 27-29~~ claim 27, characterized in that the complex of recognition species B and substrate S is isolated in a further step.

31. Process according to Claim 30, characterized in that the complex of recognition species B and substrate S is isolated after freezing the binding equilibrium or covalent cross-linking of recognition species B and substrate S.

32. Use of the recognition system according to ~~one of Claims 1-26~~ claim 1 for finding a substrate S for diagnosis, for the preparation of a catalyst and/or for the preparation of an electronic component, in particular for the finding, for the optimization and/or for the preparation of a pharmaceutical active compound or plant protection active compound.